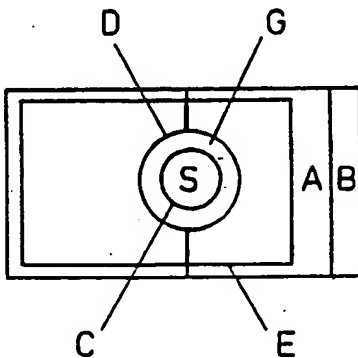


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(51) International Patent Classification⁴ : B65D 75/30, 75/60</p> | <p>A1</p> | <p>(11) International Publication Number: WO 90/05683 (43) International Publication Date: 31 May 1990 (31.05.90)</p> |
| <p>(21) International Application Number: PCT/AU89/00180 (22) International Filing Date: 26 April 1989 (26.04.89) (30) Priority data: PJ 1621 24 November 1988 (24.11.88) AU (71) Applicant (for all designated States except US): LEIFRON PTY LTD [AU/AU]; 9 Bells Road, Dundas, NSW 2117 (AU). (72) Inventor; and (75) Inventor/Applicant (for US only) : WILLMOT, Albert, James [AU/AU]; RMB 87, Wauchope, NSW 2446 (AU). (74) Agent: THOMSON, William, Lewis; P.O. Box 291, Woden, Canberra, ACT 2606 (AU). (81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US.</p> | | <p>Published <i>With international search report.</i></p> |
| <p>(54) Title: DEVICE FOR STORING AND APPLYING SUBSTANCES TO SURFACES</p> <div data-bbox="625 1167 980 1522" data-label="Image">  </div> <p>(57) Abstract</p> <p>An openable heat sealed sachet for the storage of small quantities of medicinal, cosmetic, pharmaceutical powders, fluids, creams and lotions fabricated from two superimposed flat sheets of material (A, B) such as paper, metal foil or polymer plastics laminated on one surface with a layer of weldable polymer plastics material. Each of the two sheets of material have a different polymer plastics material laminated to its surface selected to the soften and flow at a common temperature to adhere to each other to form the sealed areas (C, D, E) of the sachet but when cooled allow the sealed areas to separate without tearing the contained substance. The substance to be stored is attached to one of the sheets prior to sealing and multiple seals (C, D) are formed around the substance to effectively seal the substance within the sachet. After peeling open the sachet the sheet with the attached substance may be used as an applicator.</p> | | |

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DEVICE FOR STORING AND APPLYING SUBSTANCES TO SURFACES

This invention relates to a device for the storage, examination and use directly from the device of a wide range of substances in small quantities. The device
5 itself also is an applicator of the contained substance thus allowing the contained substance to be applied without the user having to touch the contents in any way. The substances may include waxes, oils, powders, creams and liquids either in their pure state or as
10 part of the formulation of another substance.

Because of the nature of its construction and method of sealing in the contents, the said device can be used as a system for sampling small quantities of virtually any substance.

15 Many different methods used for packaging and storing substances include glass and plastic jars, tubes made from plastic and metal, cans, sachets and phials. The majority of these methods use an opening procedure based on tearing or cutting the package,
20 unscrewing a cap, or removing a cap or pressed seal.

The containers are also designed to carry more material than needed to be a viable means of storage. It is usually uneconomic to store small quantities (such as used for sample purposes) in these containers and in
25 many cases the contents cannot be seen prior to opening the container. Various processes have been tried for

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holding small amounts of cosmetics such as lipsticks and powders, some by applying these substances to a carrying sheet and covering them with a second sheet of clear plastic or polyester. The top sheet is either
5 left loose or else held in place by some form of adhesive. None of these methods have been very successful as the product contained has had to be modified in some way in order to be applied to the base sheet. This means that the sample in the device is not
10 a true physical and chemical rendition of the real substance as sold in larger quantities. The methods of sealing have not always been desirable as some allow the product to leak out or allow the entry of foreign bodies including bacteria into the sample.

15 Many pharmaceutical and medicinal substances or drugs are often packaged in much larger quantities than may be immediately required thus resulting in contamination of the balance of the substance once the container has been opened for use. Similarly two part
20 reactive adhesives are packaged in quantities much larger than are required for any one application resulting in spoilage and wastage of the remaining product.

Tub or depression type containers are of their
25 nature required to be made from rigid materials which can be a restriction to their usage and size. The

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inherent wastage therefore associated with many substances in different packaging systems costs the user a considerable sum of money as the excess has to be paid for. In the case of lipstick in the familiar tube, much is wasted in melting on hot days, by changes in colour fashion and by deterioration of the product. The device described herein can be used to store and supply directly, sufficient product for a single use as required.

10 The nature of the surface films on the laminates that comprise the device to be described in this invention is such that it will adhere when heated and softened to a very wide range of other materials. Thus a piece of woven or non-woven fabric of synthetic or
15 natural fibre origin or sponge material can be attached to the said film and then used if desired as a carrying medium for another product such as a powder or liquid. This adhered implant, if desired, can be of an existing manufactured product such as a medicinal swab, cotton
20 wool or other desired product. Any of these adhered products can then be sealed into the device with the device providing a totally protective barrier to contamination.

Existing sachets and most other packages formed by
25 heat sealing films together are designed to be opened by tearing or cutting off a corner of the packet. This

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device differs in that it uses the principle of actual separation of the films along the welded joins. No tearing or cutting of the device is therefore needed to open it.

5 The product contained within the device can be applied by direct application to a surface without the need to firstly remove the substance.

 This invention relates to a device for applying decorative, cosmetic, medicinal or other substance to
10 surfaces such as animal skin and in particular to the human body.

 It is also intended to be used as a means of applying existing manufactured products to any desired surface. It is also intended for use in the
15 application of scientific study and evaluation by being used to apply and contain substances which from time to time may need to be observed, studied and recorded in-situ without disturbing the process under investigation.

20 This device is an improvement on a device described in Australian patent applications PH 07859 and PH 03287 and PCT/AU87/00304 in that this device uses two different polymer plastic surfaces on the laminates of which it is constructed ensuring
25 separation of the sealed joins and also has an improved multi-sealing system, enabling the contents to

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be more clearly defined and protected against leakage and contamination. An improved method of application is also used.

Decorative substances such as that commonly and commercially known as lipstick are usually applied as solid gels, wax or greases by direct application or by means of brushes or an extension from tubes or cylinders. Other cosmetic or medicinal substances such as powders and ointments are applied similarly. These methods of supply and storage create a number of difficulties. These include problems of storage of more material than can be used at any one time, creating a situation of potential waste, some are bulky to carry, difficult to apply, often leak and melt and are undesirable in the hands of children. Unsightly contamination of other parts of the body is often the result. This device overcomes all of these difficulties by being able to be used as a means of applying the contained substances directly from the device without waste or contamination.

The basic device consists of an openable sealed capsule in the form of a preferably flat rectangular, elliptical, circular or other shaped strip. Desirably the said capsule is formed by two flat pieces of material, composed of polymer plastic, metal foil or paper with a polymer plastic adhering to its surface.

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Each of the two said pieces of material having a different polymer plastic compound laminated to its surface.

These two said flat pieces of material are sealed together along a line immediately surrounding the applied or contained substance and in a shape closely resembling it. A second seal of the same shape may be formed in close proximity to the first seal. The annulus of unsealed material left between the said first and second seals is desirably no less than 1mm wide causing a physical separation of unwelded material between the two seals. The purpose of this said annulus is to allow any escaped product from the said first seal to be effectively contained within the said formed space thus lessening the possibility of escape past the second seal. A further seal, if required, may then be applied by heat welding a particular shape or pattern at some distance from the said first or second seal and in close proximity to the peripheries of the device. This said seal acts as further security against leakage but need not be the same shape as the said other seal or seals.

The weldable surfaces of the said laminates composing the device must have the physical characteristic enabling both be softened and made to flow at a common temperature and adhere one to the

SUBSTITUTE SHEET

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other yet when cold again are incompatible enough to allow the welded areas to be separated without tearing.

The two said flat pieces of material so joined then form a sealed capsule.

5 Prior to forming the said capsule, decorative, cosmetic, medicinal or other substance or article is applied to the inner surface of the said laminate by a process that ensures the said substance is firmly attached to at least one of the inner surfaces of the capsule. When the said capsule is then sealed, the adhered substance or article is sealed inside the said capsule.. Where required the surfaces of the said device may be printed upon or otherwise decorated.

15 A number of capsules may be fabricated side by side on the one base piece of said flat material.

 To use the device the said capsule is opened by parting the welded edges of the preferably flat pieces of material by peeling back one of the said pieces, either discarding it or leaving it attached at one sealed edge, enabling the capsule to be closed again after use. Once the said capsule is opened the said contained substance is exposed ready to be applied to any desired surface. After application, the said device can be cleanly disposed of.

25 In a preferred form the said capsule is formed from two flat rectangular pieces of material, one made

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from paper with adhered surfaces including a weldable polymer plastic. The other piece of clear polyester sheet to which a thermo setting polymer plastic of lower melting point has also been laminated to form a single sheet. One of these two said sheets is partly coated with a cosmetic substance to a specific design and then the said two sheets welded together around the margin of the said substance such that the said substance is effectively contained within the heat sealed or welded area. A second seal 1mm away from the said first seal is then fabricated. A third seal is also fabricated near three of the edges of the now formed capsule extending to the fourth edge but some 10mm away from that edge. At this edge one of the two sheets is cut 2mm shorter than the other sheet to produce a flap to facilitate separation of the said two sheets. Prior to applying the said substance to the said sheet and prior to heat sealing the said capsule, a fold is formed in the said first sheet being approximately 6mm in size and the inner faces of the said fold are also heat sealed together. This fold then protrudes below the said sheet. When the two said flat pieces of material are clearly separated in the operation of opening the said capsule the said contained substance remains firmly attached to the said first sheet. The said protruding fold allows the said

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capsule to be firmly and easily held between the fingers of one hand leaving the other hand free to remove the other said sheet.

Application is carried out by bringing the now
5 exposed substance into contact with the desired surface or tissue. Alternately the substance can be removed from its attachment to the said sheet by using a finger or other utensil. During the process of application using this preferred form of the invention, the opened
10 device is held by the said protruding fold.

This preferred form is shown in oblique drawing, figures 1, 2 and 4 and in plan by figure 3.

Figure 1 shows the said two flat pieces of laminate material labelled A and B. F refers to the
15 said fold prior to heat sealing. Figure 2 shows the said fold now heat sealed and the substance to be contained applied to the said first sheet. This substance is labelled S. Figure 3 shows the position of the applied substance and the positions of the first
20 seal, labelled C, the second seal labelled D. The annulus produced between these two seals labelled G and the third or security seal labelled E. Figure 4 shows the said capsule device opened with the top sheet still attached ready to apply the said contained substance.

25 A preferred form of the invention consists of two of the said capsules mounted on each side of a single

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piece of double sided flat material. A said capsule is then formed on each side of the said piece of flat material by the use of two other pieces of said laminate. This preferred form allows the inclusion of two different substances to be included in the one device.

A preferred form of the said capsule is used for holding a manufactured article in use such as a medicated pad or other dressing strip. The problems associated with the use of swabs are caused by the method of handling of the swab and its disposal after use. In the case of adhesive dressing strips to remove the covering pieces, the operator usually has to hold the strip by an exposed adhesive area or by the dressing pad itself. The adhesive ends of a dressing type strip often become rolled over upon themselves rendering the article useless. It is also very difficult to apply medicinal creams to the pad. When used in conjunction with this said device the problems cease to exist. The swab or strip is adhered to an inner surface of one of the said pieces of material of the said capsule by heat welding it to the laminated surface. This piece of the said capsule will now be referred to as the base piece of the said capsule.

The dressing pad or swab can then be impregnated with any suitable medicinal substance and the other

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said piece of laminate of the capsule now referred to as the cover piece of the said capsule is brought over the exposed side of the said swab completely covering it. Both the base piece of the said capsule and the
5 cover piece are made conveniently larger than the attached swab to enable the heat welding and sealing process as previously described to be carried out.

To use the applicator in this form, the cover piece of the said capsule is removed to expose the
10 strip which is then applied to the surface or tissue desired, pressed onto the surface to ensure absorption of any blood or other fluid or substance and when used the said applicator capsule base sheet can be folded over the said swab to allow for hygienic disposal. In
15 this form the said base laminate of the said device has a layer of aluminium foil laminated into it.

A preferred form of the said capsule is designed to allow the application of certain medicinal substances such as antibiotic creams and powders, slow
20 release drugs such as insulin, antihistamine, sera, stimulants and the treatment of bruised inflamed muscle and bone indications by the use of penetrating substances. This same preferred form of the said capsule in its transparent form can be used to study
25 the effects of desired treatment while in-situ.

The base piece of the said capsule is manufactured

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from a transparent polymer plastic sheet of chemically and medicinally inert selected material and has a depression or blister moulded into the central region of the said piece. An adhesive of a pressure sensitive type such as is currently in use for the attachment of articles to human skin is then applied to the base piece of the said capsule so as to surround the blister area. Medicinal or other substance to be used or studied is then introduced into the blister. A sealing membrane of permeable, dissolvable or perforable material is then applied to cover the medicinal or other substance. A cover piece of the said capsule is then applied to cover the whole area of the base piece and sealed as in previously described manner.

To use the said capsule in this form, the cover piece of a said capsule is peeled back to expose the adhesive area and the sealing membrane of the blister area of the capsule. The base piece of the said capsule is then applied to the required area and the cover piece removed by pulling it clear of its point of attachment leaving part of the said capsule intact and adhering to the area. The said transparent blister can then be used as a reservoir in which the contents can be observed and renewed if required. The attached device can remain in place as long as desired without the need to replace the usual dressings that can lead

SUBSTITUTE SHEET

to contamination.

A preferred form of the said capsule consists of the previously described basic capsule in which absorbtive pads such as an inert polymer plastic foam or non-woven cellulose are attached to the said inner surface or covering part of these surfaces.

The purpose of these absorbtive pads is to enable the use of liquid substances in the said capsule which will be held within the pad material and released when pressure is applied to the pads.

In a preferred form of the invention the said fold in the flat base sheet is not fabricated as described. Instead the said peripheral or security seal is made comparatively wider along one edge to allow a convenient place whereby the device may be held.

This invention may be constructed in a number of forms and shapes for different applications. The diagrams and preferred forms described herein are meant only to provide examples of specific forms and in now way are meant to detract from the generality of the invention.

When used as a means of holding, prior to application of sterile dressings, this device provides a secure contamination free container due to its unique system of seals. Thus biological and pathological samples can be contained within a said capsule and

SUBSTITUTE SHEET

applied directly to a surface for further study without having to touch the said sample. Additionally, such samples can be left attached to the said base sheet for further investigation and testing.

- 5 In other technologies, multi-chambered versions of the device can be used where more than one substance needs to be stored prior to mixing.

 The said base piece of the said device may be coated on its external surface with a pressure
10 sensitive adhesive protected with silicone release paper until required. This allows the device to be attached to any other medium such as the printed page of media publications, rigid card or other existing article or container.

- 15 In any of the preferred forms described herein or any other version that can be used to hold fluids, the said seals can be so fabricated in strength and shape so as to allow the said seals to be opened by a very small amount leaving a fine outlet through which the
20 contained fluid may be squeezed out slowly by applying gentle pressure to the sides of the said capsule.

 Due to the nature and method of forming this said device its preferred method of manufacture is desirably carried out as a continuously formed strip of said
25 capsules which can be die-cut to any desired design or perforated between individual devices to allow

SUBSTITUTE SHEET

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dispensing from continuous dispensing equipment.

Any of the herein described preferred forms may have the said seals fabricated in such a fashion as to result in the molten polymer materials forming the seals being left as a raised ridge surrounding the contained substance whereby this ridge when cooled and hardened forms a protective barrier to effectively form a well for the contained substance. This said ridge then acts as support for applied pressure from above and below the said capsule such as would be experienced when the capsule is attached to or forms part of a page of a magazine or other media product, and other such publications are stacked on top of it or bound in bundles.

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The claims defining the invention are as follows:-

1. A device for the storage of small quantities
of medicinal, cosmetic, pharmaceutical powders, fluids,
creams and lotions said device being composed of an
5 openable heat sealed capsule fabricated from preferably
flat sheets of laminated materials such as paper, metal
foils, polymer plastics and the like, separate sheets
of said material having different polymer plastics
adhered to their surfaces such that the said surface
10 will melt and join together when heated but having the
specific characteristic that said joins will separate
when cooled without tearing of the said surface
materials, the contained substance being physically
attached to the surface of a said sheet of the said
15 device prior to sealing with multiple seals fabricated
into the said flat sheets.
2. A device as claimed in claim 1 wherein the openable
sealed capsule becomes the actual applicator of the
enclosed substance thus eliminating the need for any
20 external instrument to remove the said substance.
3. A device as claimed in claim 1 to which is attached
an absorbent pad of material capable of holding fluids
and some powders, said pad being used directly to apply
the contained substance.
- 25 4. A device as claimed in claim 1 wherein the device
constitutes two or more capsules containing substances,

SUBSTITUTE SHEET

17.

which capsules may be made to allow adjacent substances to mix and therein react prior to opening the said device.

5. A device as claimed in claim 1 wherein the device
5 can be used as a system for holding small amounts of a substance required to be sampled or tested.

6. A device as claimed in claim 1 wherein existing products can be heat sealed to an inner surface of the said device whereby such product can be used by holding
10 the device and not having to touch the adhered product.

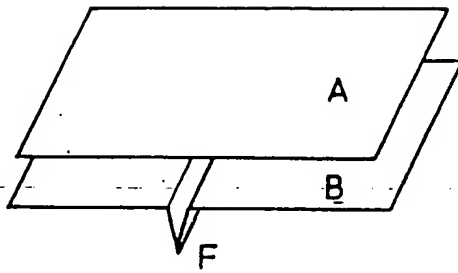
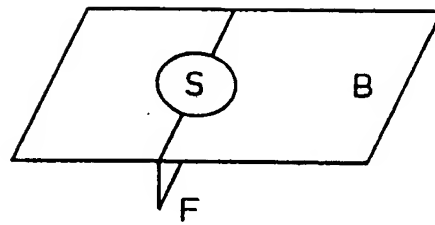
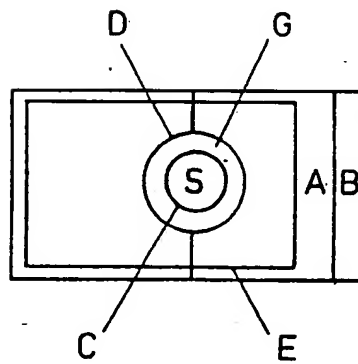
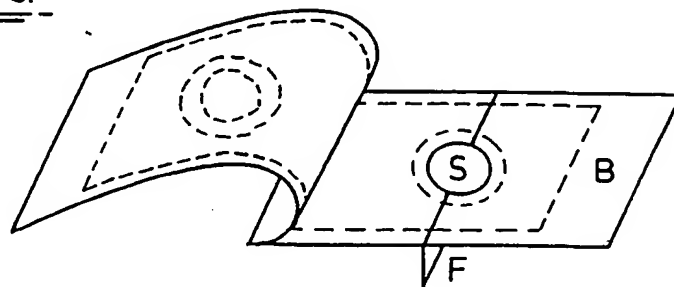
7. A device as claimed in claim 1 wherein the one piece of the capsule can be permanently deformed by folding and can thus form a package to contain any
15 unused substance once opened.

8. A device as claimed in claim 1 having a pressure sensitive adhesive coating allowing it to be attached to other surfaces.

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Figure 1.Figure 2.Figure 3.Figure 4.**SUBSTITUTE SHEET**

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) 6

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.⁴ B65D 75/30; 75/60

II. FIELDS SEARCHED

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Classification Symbols

IPC

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Documentation Searched other than Minimum Documentation
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AU IPC as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT 9

| Category* | Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages 12 | Relevant to Claim No 13 |
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| Y | | (1-8) |
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| Y | AU,A,81578/75 (HARRISON & SONS et al) 2.12.76 (02.12.76) | (8) |

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IV. CERTIFICATION

Date of the Actual Completion of the
International Search
26 June 1989 (26.06.89)Date of Mailing of this International
Search Report

11 July 1989 (11.07.89)

International Searching Authority

Signature of Authorized Officer

Australian Patent Office

R. KIRBY

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 89/00180

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document
Cited in Search
Report

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